

REMARKS

Claims 1-4, 6, 10-15, and 23-30 are all the claims presently pending in the application. Claims 5, 7-9, and 16-22 are canceled. There are no new claim amendments.

It is noted that Applicant specifically states that no amendment to any claim herein, if any, should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-4, 6, 10-15, and 23-30 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over US Patent 6,909,151 to Hareland, further in view of US Patent Publication 2004/0108559 to Sugii et al.

Claims 1-4, 6, 10-15, and 23-30 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over US Patent 6,909,151 to Hareland, further in view of one or more of previously-cited US Patent Publications: 2004/0227185 to Matsumoto et al., 2004/0075148 to Kumagai et al., and/or 2005/0079677 to Ke et al.

Claims 1-4, 6, 10-15, and 23-30 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over US Patent Publication 2004/0173815 to Yeo et al., further in view of Sugii.

Claims 1-4, 6, 10-15, and 23-30 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over US Patent Publication 2005/0190421 to Chen et al, further in view of Sugii.

Applicants traverse these rejections in the discussion that follows.

I. THE CLAIMED INVENTION

As described and defined in, for example, claim 1, the present invention is directed to a method of forming a FinFET (Fin Field Effect Transistor) containing a plurality of fins interconnected by fin connectors. At least one localized stressor region is formed within the device, the at least one localized stressor region being located on one of the fin connectors.

Conventional methods, such as described in paragraphs [0005] through [0007], strain FinFETs by Si or SiGe, but have caused defects, thereby lowering yields.

The claimed invention, on the other hand, provides a localized stressor embedded within the device.

II. THE PRIOR ART REJECTIONS

The Rejections Based on Hareland

The Examiner alleges that Hareland, when modified by one or more of Sugii, Matsumoto, Kumagai, and/or Ke, renders obvious all pending claims. Applicants respectfully disagree, since the independent claims clearly require that a localized stressor be located on the fin connectors of a finFET.

In the rejection currently of record, the stressor of primary reference Hareland is not a localized stressor, since it covers the entire device. Moreover, Hareland clearly fails to teach or suggest placing the localized stressor on the fin connectors 522, 524 of its finFET.

Therefore, the Examiner's initial burden is to provide a rationale to modify Hareland to convert its generalized stressor into localized stressors located on the fin connectors 522, 524.

The Examiner introduces secondary reference Sugii as demonstrating a localized stressor 5 in Figures 13, 14, and 19-29. These figures are described in paragraphs [0042-0058] of Sugii as related to the third embodiment of this reference. However, these localized stressors of Sugii for the third embodiment are described beginning in paragraph [0123] as being "... *concerned with a transistor having strained silicon channels of a fin-shaped structure.*" Subsequent paragraphs then describe how "fin-shaped silicon" is formed on a silicon germanium layer 4, the located on the channel, not on the fin connectors, as required by the plain meaning of the claim language.

However, providing fin-shaped silicon areas does not satisfy the plain meaning of the claim language of even the independent claims, since the plain meaning requires that the localized stressor be located on the fin connectors, not the fins themselves or that the fins comprise localized stressors.

Therefore, even if the fin-structures of newly-cited Sugii were to be considered to be local stressors and even if these fin-structures were to be considered as fins in a finFET, these stressors would not be located on the fin connectors (e.g., 522, 524 of Hareland Figure 5E), as required by the independent claims.

Moreover, Applicants submit that the rejection of record fails to provide a reasonable rationale to modify Hareland, since the reasoning of record (e.g., "... *because fin connectors can*

be formed [at the] same time as source/drain regions”) would be completely irrelevant.

Moreover, as mentioned above, even if the localized stressors described in newly-cited Sugii were to be considered as a substitute method of forming a stressed region in the channel, the method of Sugii does not locate these localized stressors on the fin connectors, as would be required to satisfy the plain meaning of the claim language.

The same deficiency arises with the remaining secondary references, since none of Matsumoto, Kumagai, or Ke suggests locating localized stressors on the fin connectors of a finFET device.

Hence, turning to the clear language of the claims, in Hareland there is no teach or suggestion of: “... forming at least one localized stressor region within said device, said at least one localized stressor region being located on one of said fin connectors”, as required by independent claim 1. Independent claim 14 has similar language.

Moreover, it is noted that the rejection of record improperly fails to adequately point to specific locations in any of cited references for at least dependent claims 23, 27, and 30. Applicants request that the Examiner make such specific locations of record in the next Office Action.

Therefore, in view of the above discussion, all pending claims are clearly patentable over Hareland, and the Examiner is respectfully requested to reconsider and withdraw this rejection.

The Rejection Based on Yeo

The Examiner alleges that primary reference Yeo renders obvious the claimed invention when modified by newly-cited Sugii.

However, to the extent that Yeo’s method is considered as demonstrating a localized stressor, paragraph [0030] clearly describes its technique involve placing the material in the source and drain regions, not on the fin connectors. And, as explained above, newly-cited Sugii does not suggest locating its localized stressors on the fin connectors of a finFET. Therefore, even if Sugii were to be combined with Yeo, the combination would still fail to satisfy the plain meaning of the claim language.

The Rejection Based on Chen

The Examiner alleges that primary reference Chen renders obvious the claimed invention when modified by newly-cited Sugii.

However, to the extent that Chen's method is considered as demonstrating a localized stressor, paragraphs [0044-0045] clearly describe its technique involve placing the material in the source and drain regions, not on the fin connectors. And, as explained above, newly-cited Sugii does not suggest locating its localized stressors on the fin connectors of a finFET. Therefore, even if Sugii were to be combined with Chen, the combination would still fail to satisfy the plain meaning of the claim language.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggest by Hareland, Yeo or Chen, and the Examiner is respectfully requested to withdraw these rejections.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-4, 6, 10-15, and 23-30, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

Serial No. 10/710,272
Docket No. FIS920030389US1 (FIS.082)

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 09-0458.

Respectfully Submitted,



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CERTIFICATION OF TRANSMISSION

I certify that I transmitted via EFS this Amendment under 37 CFR §1.111 to Examiner H. Jey Tsai on May 27, 2008.



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